

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of)	Examiner: Unknown
LARDEAU)	
)	Art Unit: Unknown
Serial No.: 10/538,810)	
)	Confirmation: 5675
I.A. Filed: December 10, 2003)	
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For: MODULAR REMOVABLE)	
PADDING FOR)	
PROTECTIVE HELMET)	
AND HELMET EQUIPPED)	
THEREWITH)	
)	
Date of Notification:)	
February 14, 2006)	
)	
Attorney Docket No.:)	Cleveland, OH 44114
GSQZ 2 00074)	March 9, 2006

SUBMISSION OF VERIFIED TRANSLATION

Mail Stop: Missing Parts
Commissioner For Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The applicant is filing herewith a Verified Translation of the priority French-language Patent Application No. PCT/FR2003/003645 (WO 2004/062411) which was previously submitted to the U.S. Patent and Trademark Office and accorded Serial No. 10/538,810.

The verified English translation of the application comprises:

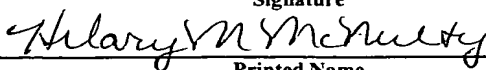
12	pages of Specification
4	pages of Claims
1	page of Abstract

Certificate of Mailing

I certify that this Submission of Verified Translation of Application & English Translation in connection with Ser. No. 10/538,810 are being

☒ deposited with the United States Postal Service as First Class mail under 37 C.F.R. § 1.8, addressed to:
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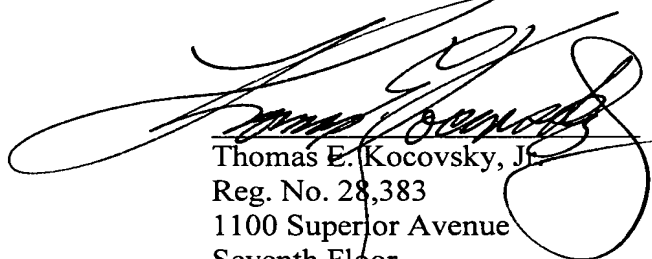
Date
March 9, 2006

Signature

Printed Name
HILARY M MCNULTY

Early notice that the filing requirements have been met and an early allowance of this application is respectfully requested.

Respectfully submitted,

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F. LARDEAU, et al.)		
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)		
Attorney Docket No.:)	Cleveland, OH 44114	
GSQZ 2 00074)	June 8, 2005	

STATEMENT OF VERIFIED ENGLISH TRANSLATION

Commissioner For Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The undersigned translator is fluent in French and English and that to the best of her knowledge and belief, the enclosed is a true and accurate translation of the French-language Patent Application No.PCT/FR03/03645 (WO /04 62411).

The undersigned further declares that all statements made herein of her own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful and false statements may jeopardize the validity of the application or any patent issuing thereon.

Signed: K. Kocovsky Date: 7/13/05

By: _____
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MODULAR REMOVABLE PADDING FOR PROTECTIVE HELMET AND HELMET EQUIPPED THEREWITH

The present invention relates to padding for protective helmets, and more particularly a removable supplementary padding allowing an adaptation of the helmet volume to the form and dimensions of the user's head. The invention
5 also relates to helmets equipped with the padding.

One already knows protective helmets used in various fields and which are worn by a variety of diverse users such as cyclists, motorcyclists, firemen, skiers, and others, such as airplane or helicopter pilots.

10

All the current helmets, whatever their use, include an external rigid shell having a generally spherical shape, and whose cavity is thus formed and includes elements of protective padding and comfort intended to encase and protect the head of the user, while rendering the wearing of the helmet
15 comfortable.

The protective helmet must have appropriate interior dimensions and be in conformity with the dimensions, form, and volume of the head of the user. Helmets being industrially-made products, it is thus not possible, taking into
20 account the diversity of the wearers' heads, to industrially manufacture specific helmets adapted to each user.

Thus, the helmets are marketed according to various sizes, but others include systems of adjustment in order to adjust to and be regulated by the desired dimensions and volume to adapt to the user.

- 5 The French patent published under the number 2 746 602 reveals a helmet whose adjustment includes several adjustable knobs which cover the interior of the helmet, which are to be in contact with the head of the user. It was understood that this device is not at all satisfactory, because the contacts with the interior of the helmet are specific and render the wearing of the helmet
10 particularly uncomfortable, and that, of course, affects its safety.

- One knows also the device revealed by the American patent US 3,082, 427 includes a deformable internal cap made of an adjustable mesh. This device forms part of an obsolete technology, and the helmet is meant, to some
15 extent, to be floating, and is thus uncomfortable and a little unsafe.

- The international patent application WO 9210952 reveals an adjustment including a plurality of inflatable compartments. This concept, even if it appears, at first sight, alluring, is a difficult technology to implement and is not
20 very reliable because the inflatable cells are constantly damaged.

All of the former systems thus present a certain number of disadvantages and those being, in particular, expense, a lack of reliability, discomfort, and a lack of practicality.

The present invention thus wants to solve these disadvantages by proposing a modular and modifiable supplementary padding, constituted by a removable envelope into which can be introduced one or more supplementary elements of padding, the aforementioned envelope being advantageously affixed in a removable way to the interior of the helmet. The padding is between the helmet itself, with its resident padding and lining, and the cranium of the user.

Thus, according to the invention, padding for a protective helmet is a supplementary padding, including an envelope intended to be attached inside the helmet; the aforementioned envelope being made out of flexible material and including at least a supplementary element of padding made out of synthetic foam, while the envelope includes at least one opening allowing the introduction of the supplementary element into the aforementioned envelope. As well as including the means of attaching the padding inside the helmet.

15

According to a supplementary characteristic, the supplementary padding is intended to be attached inside the helmet in a removable way by means of removable attachments, for example, using one or more bands of auto-gripping textile, such as the type with hooks.

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According to a preferred embodiment, the supplementary padding is an envelope having the general shape of a 'T', which includes a longitudinal central branch, whose front end is elongated laterally towards the left by a left side branch and towards the right-hand side by a right side branch.

- According to supplementary characteristics of the preferred embodiment, the supplementary padding is made of a lower wall, connected by its edge to an upper wall, the aforementioned walls being made of a soft material such as, for example, fabric, which is able to be deformed, while the longitudinal
- 5 central branch includes, on its upper wall in contact with the lining fabric, an opening to constitute a longitudinal central pocket into which can be introduced a supplementary element of central padding, while the left side branch includes, on its upper wall in contact with the lining fabric, an opening to constitute a longitudinal central pocket, into which can be introduced a
- 10 supplementary element of central padding, the longitudinal right side branch including, on its upper wall, an opening to constitute a longitudinal central pocket, into which can be introduced a supplementary element of central padding.
- 15 According to another characteristic, the central junction of the three branches of the envelope includes, on its upper wall, an opening to constitute a longitudinal central pocket, into which can be introduced a supplementary element of central padding.
- 20 According to another characteristic, it is the higher wall of the envelope which includes at least one band of auto-gripping textile of the type with hooks.

The invention also relates to the protective helmet equipped with supplementary padding, the aforementioned helmet being, for example, a

rigid primary shell, including an internal padding commonly called "calotin", made out of rigid synthetic foam such as expanded polystyrene or of polyurethane foam, and includes, in addition, an interior trim including a layer of foam ensuring the comfort of the helmet and a comfortable lining fabric intended, in particular, its interior decoration, while the removable supplementary padding is attached to the comfortable lining fabric.

Let us add that, according to the preferred embodiment, the central junction of removable padding is affixed on the frontal zone of the interior of the helmet, while the two side branches are affixed laterally in the area of the temples, and that the longitudinal central branch is affixed in the plane of symmetry which extends from the frontal zone backwards, for example, to the nape of the neck.

Other characteristics and advantages of the invention will emerge from the description which follows, referring to the annexed drawings which are given only by way of nonrestrictive examples.

Figure 1 is a prospective view of a helmet without supplementary padding, while Figure 1a shows the padding right before its installation in the helmet.

Figure 2 is a prospective view of a helmet in the invention, equipped with supplementary padding, with a part of the aforementioned padding shown in phantom.

Figure 3 is a front view of the helmet equipped with its supplementary padding.

5 Figure 4 is a side view of the helmet equipped with its removable padding, while the Figure 4a is a sectional view, on a large scale, revealing the succession of layers laid out inside the shell of the helmet, including the layers of supplementary padding.

10 Figure 5 is a schematic view, in perspective, of the supplementary padding before its installation.

Figure 6 is a top view of the supplementary padding laid flat, equipped with its supplementary elements of padding.

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Figure 6a is a cross-section of A-A of the Figure 6, while Figure 6b is a cross-section of B-B of Figure 6.

The protective helmet (1), intended to be equipped with the padding of the
20 invention, represented by way of examples in figures 1 to 4, is, for example, a helmet for airplane pilots. It presents a longitudinal plane of general symmetry (P) which includes in a known way a principal external shell (2) including a resident internal padding, commonly called "calotin" (3), and an internal lining (5).

- The principal external shell (2) is made up of an appreciably spherical wall (4) along a general vertical plane of symmetry (P) which is advantageously made of composite material including a stack of layers made of reinforcing fibers, impregnated and bound by a resin matrix. The fibers can be made of carbon or polyethylene, nylon, aramide, glass fibers, while the matrix can be a resin of the thermal hardening or thermoplastic type. Of course, the shell could be in any other material such as, for example, steel.
- 5
- 10 The resident internal padding (3) includes a layer of rigid synthetic foam such as foam of expanded polystyrene or polyurethane or other types of polymer. The resident internal padding (3) ensures the protection of the user's cranium by impact damping and thus includes an enveloping wall, for the cranium on the upper surface (30) conforms in large part to the interior shape of the
- 15 interior surface of the shell, while its lower surface (31) conforms to the shape of cranium.

The resident padding (3) thus ensures the protection of the cranium, while it is over laid with an interior trim (5), including a layer of foam (6) ensuring the comfort of the helmet, and a comfortable lining fabric (7), in particular intended, for interior decoration, and attachment of the padding.

20

The supplementary padding, which is advantageously removable (8), is formed of an envelope (9) made of deformable material, such as fabric or the like, inside of which is at least one supplementary element of padding (10)

made of a similar material or foam element. In addition, the envelope (9) includes at least one opening allowing the introduction and/or withdrawal and/or replacement of the supplementary element. Moreover, the means of attachment are designed to affix the supplementary padding (8) inside the
5 shell (2), and more precisely to affix the removable padding onto the comfortable lining fabric (7).

In the preferred embodiment, the removable supplementary padding (8) is an envelope (9) having the general form of a 'T', which includes a longitudinal
10 central branch (11), whose frontal end (AV) is prolonged laterally towards the left (GA) by a left side branch (12), and towards the right (DR) by a right side branch (13).

The removable supplementary padding (8), made up of its various branches
15 (11,12, 13), is an envelope (9) formed of a lower wall (14), connected by its edge to an upper wall (15), the aforementioned walls being made of a soft material such as, for example, fabric, able to be deformed and installed inside the helmet. Let us specify that the upper wall (15) of the envelope (9) is in contact with the interior of the helmet and more exactly with the comfortable
20 lining fabric (7), while the lower wall (14) is in contact with the head of the user.

One will note that the upper wall (15) includes at least one opening (16a, 16b, 16c, 16d) allowing the introduction into the envelope (9) of at least one

supplementary element of padding (10a, 10b, 10th, 10d), advantageously made out of synthetic foam.

According to the preferred embodiment, the envelope includes four openings
5 (16a, 16b, 16c, 16d) allowing the introduction of four supplementary elements of padding (10a, 10b, 10c, 10d).

Thus, the longitudinal central branch (11) includes, on its upper wall (15) in contact with the lining fabric (7), an opening (16a) to access a longitudinal
10 central pocket (160a) into which can be introduced a supplementary element of central padding (10a).

In addition, the left side branch (12) includes, on its upper wall (15) in contact with the lining fabric (7), an opening (16b) to constitute a central longitudinal
15 pocket (160b), into which can be introduced a supplementary element of left side padding (10b).

As well, the longitudinal right side branch (13) includes, on its upper wall, an opening (16c) to access a longitudinal central pocket (160c), into which can
20 be introduced a supplementary element of right side padding (10c).

In addition, the central junction (17) of the three branches (11, 12, 13) includes, advantageously, on its upper wall, an opening (16d) to access a

longitudinal central pocket (160d), into which can be introduced a supplementary element of forward padding (10d).

Let us add that the supplementary element of central padding (10a)
5 advantageously has the shape of a trapezoid whose small base (22) is in front and the large base (23) in the back, in order to be broader across the back of the user's cranium.

The various openings (16a, 16b, 16c, 16d) are, for example, simple slits made
10 in the upper wall (15) of the envelope (9).

The envelope (9) includes removable padding (8) with its supplementary elements of padding (10a, 10b, 10th, 10d) which is intended to affix itself inside the helmet onto the decorative fabric (7) of the internal lining (5). Thus,
15 the central junction (17) is affixed on the frontal zone (18) of the interior of the helmet, the two side branches (12,13) are affixed laterally in the zone of the temples, respectively (19a, 19b), while the longitudinal central branch (11) is affixed in the symmetry plane which extends from the frontal zone (18) backwards, for example, to the nape of the neck (20).

20

To retain the removable padding (8) inside the helmet, a means of attachment is envisioned, the latter allowing, for example, to affix to the upper wall (15) of the envelope (9) the on decorative fabric (7). These means are, for example, self-gripping. Thus, it is envisaged between the interior wall of the helmet and,

more precisely, between the lining fabric (7) and the upper wall (15), an attachment out of a gripping textile of the type marketed under the "Velcro" trademark, formed by a band of textile (21) of the type with hooks, intended to cooperate with the velvet of the lining fabric (7). Thus, the upper wall (15) of the envelope for the removable padding (8) includes, for example, five bands of gripping textile of the type with hooks (21a, 21'a, 21b, 21c, 21d), respectively attached on the longitudinal central branch (11), the left side branch (12), the right side branch (13) and the junction (17).

10 It was understood that, thanks to the openings (16a, 16b, 16c, 16d), the user can remove the supplementary padding elements (10a, 10b, 10c, 10d) which are removable to, if required, replace them with other removable supplementary elements of padding, which could be different, such as, for example, a different thickness, or a different matter, namely, harder or more

15 flexible, to even a different form.

Thus, a given envelope can correspond to several different types of supplementary padding elements, so that the user can choose the supplementary padding elements allowing him to obtain an optimal adaptation

20 of the interior volume of the helmet, and thus personalize his helmet to some extent.

It goes without saying that the supplementary padding which with the form of a perfect 'T' in the preferred embodiment proposed by way of example, could

have all other forms to adapt to the configuration of the interior of the helmet in which it is intended to be mounted. Thus, and for example, two side branches of the T (12,13) which is in the prolongation one of the other on the illustrations could, for example, be convergent or divergent. Also let us add
5 that, in the shown illustrations, the two side branches (12, 13) are perpendicular but it could, of course, be arranged differently, and have all other forms adapted to the helmet into which supplementary padding is destined.

10 Of course, the invention is not limited to the preferred embodiment described and represented by way of examples, but it includes also all the technical equivalents as well as their combinations.

CLAIMS

1. The padding for a protective helmet (1), characterized in that it is a supplementary padding, including an envelope (9) intended to be attached inside the helmet, the aforementioned envelope being made of flexible material and including at least one supplementary padding element (10a, 10b, 10c, 10d) made out of synthetic foam, while the envelope (9) includes at least one opening allowing the introduction of the supplementary element into the aforementioned envelope.

2. The padding for a protective helmet (1), according to claim 1, characterized in that it includes the means of attachment (21a, 21b, 21c, 21d) to affix the padding inside the helmet (1).

3. The padding for a protective helmet (1), according to claim 2, characterized in that it is intended to be attached to the helmet (1) in a removable way by removable means.

4. The padding for a helmet, according to claim 3, characterized in that the means of attachment to the helmet includes bands of self-gripping textile.

5. The padding for a protective helmet (1), according to claim 4, characterized in that this envelope (9) includes at least one band of gripping textile of the type with hooks (21a, 21b, 21c, 21d).

6. The padding for a protective helmet (1), according to any of the preceding claims, characterized in that this supplementary padding (8) is in an envelope (9) having the general form of a 'T', which includes a longitudinal central branch (11) whose front end (AV) is prolonged laterally towards the left by a left side branch (12) and towards the right by a right side branch (13).

7. The padding for a protective helmet (1), according to claim 6, characterized in that the supplementary padding (8) including its various branches (11,12, 13), makes an envelope which, is made of a wall lower (14) connected by its edge to a upper wall (15), the aforementioned walls being made of a soft material, such as, for example, out of fabric, which is able to be deformed.

8. The padding for a protective helmet (1), according to claim 7, characterized in that the longitudinal central branch (11) includes, on its upper wall (15) in contact with the lining fabric (7), an opening (16a) to access a longitudinal central pocket (160a) into which can be introduced a supplementary element of central padding (10a), while the left side branch (12) includes, on its upper wall (15), in contact with lining fabric (7), an opening (16b) to access a longitudinal central pocket (160b), into which can be introduced a supplementary element of central padding (10b); its right-hand longitudinal side (13) including, on its upper wall, an opening (16c) to access a central pocket longitudinal (160c) into which can be introduced a supplementary element of central padding (10c).

9. The padding for the protective helmet (1), according to claim 8, characterized in that the central junction (17) of the three branches (11,12, 13) includes, on its upper wall, an opening (16d) to access a longitudinal central pocket (160d), into which can be introduced a supplementary element of central padding (10d).

10. The padding for the protective helmet (1), according to any of claims 7 to 9, characterized in that the upper wall (15) of the envelope (9) includes at least a band of auto-gripping textile of the type with hooks (21a, 21'a, 21b, 21c, 21d).

11. A protective helmet (1) including a principal external shell (2) including an internal padding commonly called "calotin" (3), made out of rigid synthetic foam such as expanded polystyrene foam or of polyurethane foam, characterized in that it includes removable supplementary padding (8), according to any of the preceding claims.

12. The protective helmet (1) according to claim 11, characterized in that it includes an interior trim (5) made of a layer of foam (6) ensuring the comfort of the helmet as well as a comfortable lining fabric (7) intended in particular for its interior decoration, and to which the removable supplementary padding (8) is attached (7).

13. The protective helmet (1) according to claim 12, characterized in that the central junction (17) of the removable padding (8) is fixed on the frontal zone (18) of the interior of the helmet, while the two side branches (12,13) are fixed laterally in the zone of the temples, respectively (19a, 19b), while the longitudinal central branch (11) is fixed in the plane of symmetry which extends from the frontal zone (18) backwards, for example, to the nape of the neck (20).

MODULAR REMOVABLE PADDING FOR PROTECTIVE HELMET AND HELMET EQUIPPED THEREWITH

ABSTRACT

The invention concerns a padding for protective helmet (1), characterized in that it is a supplementary padding, consisting of an envelope designed to be fixed inside the helmet, said envelope being made of a flexible material and comprising at least one complementary padding element (10a, 10b, 10c, 10d) made of synthetic foam, while the envelope comprises at least one opening for inserting the complementary element into said envelope.